

Preliminary Data Report for Stormwater Runoff Samples Collected in Cañada del Buey At White Rock on 8/18/00

Two precipitation events occurred over the eastern Pajarito Plateau, one in the early morning hours and another in the afternoon of August 18, 2000. The TA-54 meteorological station recorded 0.26 inches by 02:15 am and 0.36 inches between 3:30 and 4:30 p.m., and daily total of 1.72 inches. The TA-6 meteorological station recorded 0.61 inches, and the TA-53 station recorded 0.95 inches for the day. The hourly precipitation recorded at TA-54 near stream gage E230 is shown on Figure 1.

The flow event associated with the precipitation events was recorded at stream gage E230 in Cañada del Buey at White Rock, which is located upstream of State Route 4 and White Rock. The average hourly flow at this stream gage for August 18 is shown on Figure 1. The peak flow volume of 1.5 cfs associated with the early storm was recorded at 02:15 and the peak flow volume of 31 cfs, associated with the afternoon storm event was recorded at 17:15 on August 18.

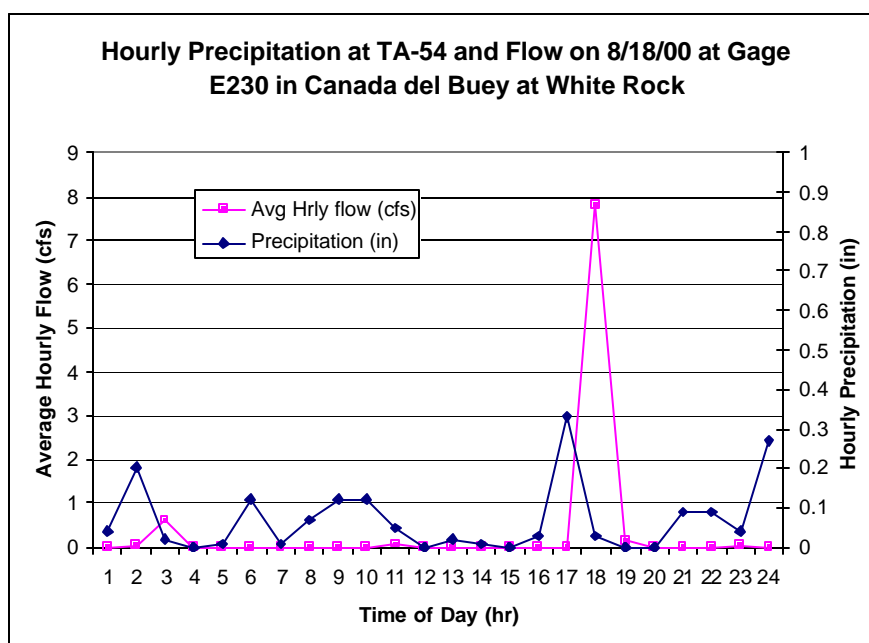


Figure 1. Flow measured at stream gage E230 in Cañada del Buey on August 18, 2000

Automated stormwater runoff samples were collected at stream gage GS E230 during both the morning and afternoon runoff events. Unfiltered samples were collected for analysis at 02:01 and again at 16:58 (sample GS00085E230) and 17:14 (sample GS00086E230) on August 18, 2000. The samples were sent to General Engineering Laboratories, Inc. in Charleston, South Carolina for analysis for radionuclides, general inorganic constituents, and cyanide.

Preliminary results of the available analyses for the samples collected during the afternoon storm event are shown in Table 1. Results of analyses of runoff collected during the early morning storm event are not yet available. Also shown on Table 1 are the maximum values of constituents that have been recorded previous to the Cerro Grande Fire in filtered and unfiltered stormwater runoff at LANL (1995 through 1999), and the DOE Public Dose Derived Concentration Guides (DCGs), for comparison purposes. Results of gamma spectroscopy are reported only for Cs-137 and other radionuclides that were detected in concentrations above the laboratory method detection limit.

The preliminary results of the analyses for radionuclides in the stormwater runoff samples collected on the afternoon of August 18, 2000 are below the historic pre-fire maximum values and are below the DOE DCGs for each analyte obtained to date except for Pb-210, which was measured using gamma spectroscopy at 655 pCi/L, above the DOE DCG of 30 pCi/L.

The unfiltered runoff sample collected on the afternoon of August 18, 2000 at 16:58 contained 9,540 mg/L total suspended solids (TSS) and the sample collected at 17:14 contained 11,500 TSS. Based on the suspended sediment concentration and the activity of the unfiltered water, the concentrations of the radionuclides in the suspended sediment fraction of the runoff sample collected at 16:48 was calculated. These calculated values are also shown on Table 1.

The background values (BVs) that have been determined for stream sediments at Los Alamos National Laboratory (Ryti et al. 1998) are also shown on Table 1. The BVs for stream sediments are provided as a comparison for the results of the calculated activities of radionuclides in the suspended sediment fraction of the runoff samples. Suspended sediments in runoff samples are typically finer grained than stream sediment samples; radionuclides have been found to be preferentially located in finer grained sediments, so direct comparison of the suspended sediment fraction of runoff samples with stream sediment BVs may not be appropriate, but are provided here for reference and comparison.

A summary of the preliminary results of the analyses of runoff collected during the afternoon storm event is shown in Figure 2. The results are compared graphically with the historic maximum values obtained for unfiltered runoff and the DOE DCGs. The preliminary results of the analyses for radionuclides in the stormwater runoff samples collected on the afternoon of August 18, 2000 are below historic maximum values and DOE DCGs for the unfiltered stormwater runoff samples, except for Pb-210, which was measured in a concentration of 655 pCi/L, compared to the DOE DCG of 30 pCi/L.

The calculated suspended sediment concentrations with comparison to the BVs for sediments are also shown in Figure 2. The calculated values are below the BVs for K-40, RA-226, and Sr-90; BVs for other available radionuclides have not been determined.

References

Ryti, R. T., P. A. Longmire, D. E. Broxton, S. L. Reneau, and E. V. McDonald, September 1998, "Inorganic and Radionuclide Background Data for Soils, Sediments and Bandelier Tuff at Los Alamos National Laboratory," Los Alamos National Laboratory Report LA-UR-98-4847. (Ryti et al. 1998, 59730)

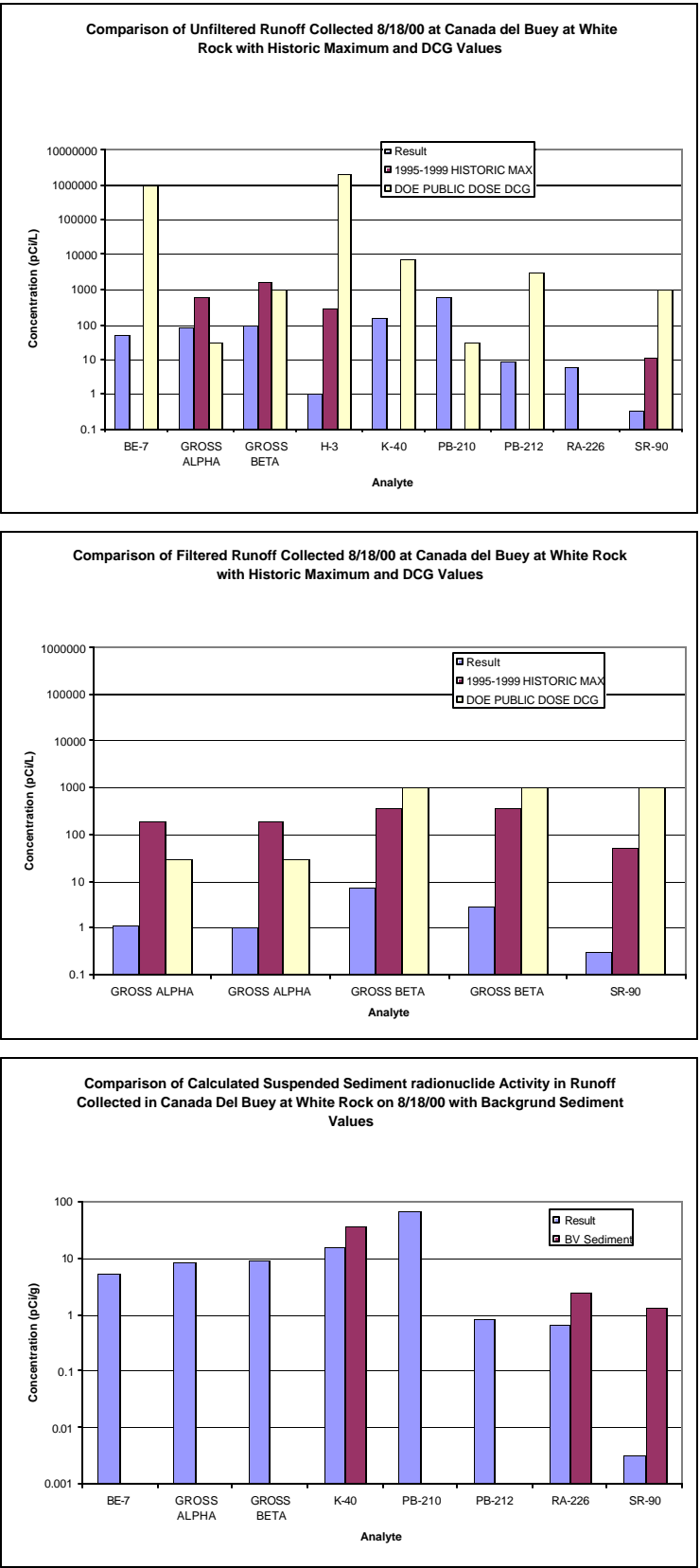


Figure 2. Comparison of runoff collected on 8/18/00 in Cañada del Buey at White Rock with Historic Maximum, DCG Values, and Background Values for Sediment

Table 1
RADIOACTIVE SCREENING MEASUREMENTS IN STORMWATER RUNOFF IN CANADA DEL BUEY AT WHITE ROCK FROM AUGUST 18, 2000 RUNOFF EVENT #2
DRAFT: DATA ARE PRELIMINARY

Canyon	Location	Sample ID	Lab Sample ID	Collection Date	F/UF	Collection Method	Analyte	Result	Units	TPU (pCi/L)	DL	METHOD	QUALIFIER	COMMENT	1995-1999 HISTORIC MAX	DOE PUBLIC DOSE DCG
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30030010	08/18/00	UF	A	BE-7	50.2	pCi/L	15.4	33.9	GAMMA SPEC				1000000
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30030010	08/18/00	UF	A	GROSS ALPHA	78.9	pCi/L	49.1	8.23	GFPC			640.8	30
Cañada del Buey	Cañada del Buey at White Rock	GF00085E230	30003009	08/18/00	F	A	GROSS ALPHA	1.12	pCi/L	0.35	0.699	GFPC			200	30
Cañada del Buey	Cañada del Buey at White Rock	GF00085E230	30030012	08/18/00	F	A	GROSS ALPHA	-0.092	pCi/L	0.281	1.04	GFPC			200	30
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30030010	08/18/00	UF	A	GROSS BETA	91.3	pCi/L	56	18.9	GFPC			1637	1000
Cañada del Buey	Cañada del Buey at White Rock	GF00085E230	30003009	08/18/00	F	A	GROSS BETA	7.17	pCi/L	0.674	1.5	GFPC			354.3	1000
Cañada del Buey	Cañada del Buey at White Rock	GF00085E230	30030012	08/18/00	F	A	GROSS BETA	2.83	pCi/L	0.53	1.56	GFPC			354.3	1000
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30030010	08/18/00	UF	A	H-3	-69.1	pCi/L	103	351	LSC			281	2000000
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30030010	08/18/00	UF	A	K-40	156	pCi/L	32.8	37	GAMMA SPEC				7000
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30030010	08/18/00	UF	A	PB-210	655	pCi/L	200	634	GAMMA SPEC				30
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30030010	08/18/00	UF	A	PB-212	8.09	pCi/L	3.66	6.92	GAMMA SPEC				3000
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30164004	08/18/00	UF	A	RA-226	6.12	pCi/L	0.688	0.937	LUCAS CELL				
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30164004	08/18/00	UF	A	SR-90	0.336	pCi/L	0.186	0.3	GFPC			10.312	1000
Cañada del Buey	Cañada del Buey at White Rock	GF00085E230	30164003	08/18/00	F	A	SR-90	0.304	pCi/L	0.237	0.392	GFPC			50.9	1000
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30080008	08/18/00	UF	A	CN TOT	0	ug/L		2.76	EPA 335.3	U			
Cañada del Buey	Cañada del Buey at White Rock	GS00083E230	30099011	08/18/00	UF	A	CN TOT	0	ug/L		2.76	EPA 335.3	U			
Cañada del Buey	Cañada del Buey at White Rock	GS00083E230	30099011	08/18/00	UF	A	SP COND	125	uS/cm		1	EPA 120.1				
Cañada del Buey	Cañada del Buey at White Rock	GS00083E230	30099011	08/18/00	UF	A	TDS	212	mg/L		12.6	EPA 160.1		AVERAGE OF 2		
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230	30030003	08/18/00	UF	A	TSS	9540	mg/L		35	EPA 160.2		AVERAGE OF 2		
Cañada del Buey	Cañada del Buey at White Rock	GS00086E230	30030004	08/18/00	UF	A	TSS	11500	mg/L		35	EPA 160.2		AVERAGE OF 2		

Calculated Suspended Sediment Concentrations of Radionuclides

Canyon	Location	Sample ID	Lab Sample ID	Collection Date	F/UF	Collection Method	Analyte	Result	Units	TPU (pCi/L)	DL	METHOD	QUALIFIER	COMMENT	BV Sediment	Ratio Result to BV
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230		08/18/00	UF	Calculated	BE-7	5.262	pCi/g	1.614		GAMMA SPEC				
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230		08/18/00	UF	Calculated	GROSS ALPHA	8.153	pCi/g	5.183		GFPC				
Cañada del Buey	Cañada del Buey at White Rock	GF00085E230		08/18/00	UF	Calculated	GROSS BETA	9.274	pCi/g	5.926		GFPC				
Cañada del Buey	Cañada del Buey at White Rock	GF00085E230		08/18/00	UF	Calculated	K-40	16.35	pCi/g	3.438		GAMMA SPEC			36.8	0.44
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230		08/18/00	UF	Calculated	PB-210	68.66	pCi/g	20.964		GAMMA SPEC				
Cañada del Buey	Cañada del Buey at White Rock	GF00085E230		08/18/00	UF	Calculated	PB-212	0.848	pCi/g	0.384		GAMMA SPEC				
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230		08/18/00	UF	Calculated	RA-226	0.642	pCi/g	0.072		LUCAS CELL			2.59	0.25
Cañada del Buey	Cañada del Buey at White Rock	GS00085E230		08/18/00	UF	Calculated	SR-90	0.003	pCi/g	0.0443		GFPC			1.3	0.003

A or M: Automated or Manual (Grab) Sample
F/UF: filtered/unfiltered
Uncert.: 1 Stand. Dev.uncertainty in result
MDA or MDC: analytical method detection limit
TPU: Total Propagated Uncertainty
DUP: Laboratory Duplicate
DL = Detection Limit
RL = Reporting Limit
BV = Background Value (95/95 UTL)

